



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,117	10/21/2005	Rogério Ramos	101.0118	4659
50258 7590 01/11/2008 SCHLUMBERGER TECHNOLOGY CORPORATION 14910 AIRLINE ROAD ROSHARON, TX 77583			EXAMINER WEST, PAUL M	
			ART UNIT 2856	PAPER NUMBER
			MAIL DATE 01/11/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/554,117	Applicant(s) RAMOS, ROGERIO	
	Examiner Paul M. West	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
4a) Of the above claim(s) 3 and 29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 60 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,17-19,26-28,30-32,43-45,52 and 53 is/are rejected.
- 7) ☒ Claim(s) 7-16,20-25,33-42,46-51 and 54-59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 9-12,14-16,20-25,35-38,40-42,46-51 and 55- 59 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot be dependent on another multiple dependent claim See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2,4,5,17,26,30/26,31/30/26 and 43/26 are rejected under 35 U.S.C. 102(b) as being anticipated by Bobb et al. (5,115,127).

4. Regarding claims 1,2 and 4, Bobb et al. teach a method of monitoring fluid flow comprising: providing an optical fiber 12 having a heatable coating 14 as a layer around the outer surface of the optical fiber; disposing the optical fiber so that the heatable coating is in thermal contact with flowing fluid (Col. 3, lines 63-68; Col. 4, line 1); launching light into the optical fiber; detecting light from the optical fiber; processing the detected light to obtain information indicative of the temperature of the heatable coating, where the temperature of the heatable coating depends on the flow rate; and using the temperature information to derive the flow rate (Col. 8, lines 18-61).

5. Regarding claim 5, Bobb et al. teach the heatable coating being gold and being heated by passing electric current through it (Col. 4, lines 2-6).
6. Regarding claim 17, Bobb et al. teach the heatable coating being provided on a distal end facet. Note that a distal end facet can be virtually any part of the optical fiber since any part of the fiber can be a distal end facet with respect to some reference point.
7. Regarding claims 26 and 30/26, Bobb et al. teach an apparatus for monitoring fluid flow comprising: an optical fiber 12 having a heatable coating 14 provided as a layer around the outer surface of the fiber extending axially along the fiber (Col. 3, lines 40-50); a power source 36 operable to heat the heatable coating; and optical source 24 operable to generate light and launch light into the optical fiber; a photodetector 42 operable to detect light from the optical fiber; and a processor 46,44 operable to process the detected light to obtain information indicative of the temperature of the heatable coating (Col. 8, lines 18-61).
8. Regarding claim 31/30/26, Bobb et al. teach the heatable coating being gold and being heated by passing electric current through it (Col. 4, lines 2-6).
9. Regarding claim 43/26, Bobb et al. teach the heatable coating being provided on a distal end facet. Note that a distal end facet can be virtually any part of the optical fiber since any part of the fiber can be a distal end facet with respect to some reference point.

10. Claims 1,2,17-19,26-28 and 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun et al. (4,986,671).

11. Regarding claims 1 and 2, Sun et al. teach a method of monitoring fluid flow comprising: providing an optical fiber 13 having a heatable coating 29; disposing the the optical fiber so that the heatable coating is in thermal contact with flowing fluid (Col. 2, lines 60-68); heating the heatable coating so that heat is transferred from the coating to the fluid; launching light into the optical fiber; detecting light from the optical fiber; processing the detected light to obtain information indicative of the temperature of the fluid; and using the temperature information to derive the flow rate of the surrounding fluid (Col. 6, lines 1-47; Col. 7, lines 32-48).

12. Regarding claims 17-19, Sun et al. teach the heatable coating 29, being provided on a distal end facet of the optical fiber (Fig. 1), and further teach the heatable coating comprising an optically absorbing material which is heated by injecting light of a wavelength that is absorbed by the material 29 (in this case infrared light) into a proximal end 31 of the optical fiber (Col. 6, lines 9-17).

13. Regarding claims 26-28, Sun et al. teach an apparatus for monitoring fluid flow, comprising: an optical fiber 13 having a heatable coating 29; a power source operable to heat the heatable coating (note that this is inherent because laser 51 which emits the infrared light for heating the coating necessarily requires some power source); an optical source 40 operable to generate light and launch the light into the optical fiber; a photodetector 77 operable to detect light from the optical fiber; and a processor 79 operable to process detected light to obtain information indicative of the temperature of

the heatable coating 29 and further derive the flow rate of the fluid from the temperature information (Col. 7, lines 32-48).

14. Regarding claims 43-45, Sun et al. teach the heatable coating 29, being provided on a distal end facet of the optical fiber (Fig. 1), and further teach the heatable coating comprising an optically absorbing material which is heated by injecting light of a wavelength that is absorbed by the material 29 (in this case infrared light) into a proximal end 31 of the optical fiber (Col. 6, lines 9-17).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 6, 27, 28, 30/27, 30/28, 31/30/27, 31/30/28, 32, 43/27 and 43/28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bobb et al.

17. Regarding claim 6, Bobb et al. do not teach providing an electrically insulating coating to cover the heatable coating. However, it would have been obvious to one of ordinary skill in the art to put an electrically insulating coating over the metal layer because it is well-known in the art to insulate electrical conductors, especially when they are immersed in liquids, to prevent corrosion and protect the user.

18. Regarding claims 27 and 28, Bobb et al. do not specifically teach the processor deriving the flow rate, but do teach deriving the flow rate using specific formulas. It

would have been obvious to one of ordinary skill in the art to use a processor that can do all the calculations and output the flow rate because it is well-known to substitute a processor for manual calculations in order to improve accuracy and efficiency.

19. Regarding claims 30/27 and 30/28, Bob et al. teach the heatable coating being provided as a layer around the outer surface of the fiber extending axially along the fiber (Col. 3, lines 40-50).

20. Regarding claims 31/30/27 and 31/30/28, Bobb et al. teach the heatable coating being gold and being heated by passing electric current through it (Col. 4, lines 2-6).

21. Regarding claim 32, Bob et al. do not teach providing an electrically insulating coating to cover the heatable coating. However, it would have been obvious to one of ordinary skill in the art to put an electrically insulating coating over the metal layer because it is well-known in the art to insulate electrical conductors, especially when they are immersed in liquids, to prevent corrosion and protect the user.

22. Regarding claims 43/27 and 43/28, Bobb et al. teach the heatable coating being provided on a distal end facet. Note that a distal end facet can be virtually any part of the optical fiber since any part of the fiber can be a distal end facet with respect to some reference point.

23. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bobb et al. in view of Shah et al. (6,847,034).

24. Regarding claims 52 and 53, Bobb et al. teach a method of monitoring fluid flow, comprising: providing an optical fiber 12 having a heatable coating 14 as a layer around

the outer surface of and extending axially along the optical fiber; disposing the optical fiber so that the heatable coating is in thermal contact with flowing fluid (Col. 3, lines 63-68; Col. 4, line 1); launching light into the optical fiber; detecting light from the optical fiber; processing the detected light to obtain information indicative of the temperature of the heatable coating, where the temperature of the heatable coating depends on the flow rate; and using the temperature information to derive the flow rate (Col. 8, lines 18-61).

25. Bobb et al. do not teach using the optical fiber in an oil well. However Shah et al. teach deploying an optical fiber 8 downhole in an oil well, and using the optical fiber to measure various parameters including temperature (Col. 2, lines 35-46). It would have been obvious to one of ordinary skill in the art to combine the teachings of Shah et al. with the method of Bobb et al. because it is well-known that monitoring the temperature and flow of fluid in an oil well is necessary for safe and efficient use of oil drilling equipment.

Allowable Subject Matter

26. Claims 7,8,13,33,34,39 and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

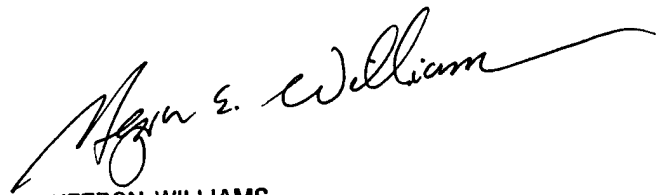
27. Claim 60 is allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul M. West whose telephone number is (571) 272-8590. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800